

ACP-5260

**5U Rackmount Industrial
Computer Chassis with SCSI
Ultra320 Mobile HDD Trays**

Trusted ePlatform Services

ADVANTECH

Copyright

This documentation and the software included with this product have been copyrighted by Advantech Co., Ltd., 2009. All rights are reserved. Advantech Co., Ltd. reserves the right to make improvements in the products described in this manual at any time without notice.

No part of this manual may be reproduced, copied, translated or transmitted in any form or by any means without the prior written permission of Advantech Co., Ltd. Information provided in this manual is intended to be accurate and reliable. However, Advantech Co., Ltd. assumes no responsibility for its use, or for any infringements of the rights of third parties which may result from its use.

Acknowledgements

The ACP-5260, PCE-5B18, PCE-5B16Q, PCA-6120P4, PCA-6120P12, PCA-6120P18, PCA-6119P7, PCA-6119P16X and PCA-6119P17 are trademarks of Advantech Co., Ltd.

All other product names or trademarks are the properties of their respective owners.

On-line Technical Support

For technical support and service, please visit our support website at:
<http://www.advantech.com/support>

Safety Instructions

1. Read these safety instructions carefully.
2. Keep this installation reference guide for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Do not use liquid or spray detergents for cleaning. Use a damp cloth.
4. For pluggable equipment, the power outlet must be installed near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall could cause damage.
7. Do not leave this equipment in an environment unconditioned where the storage temperature under 0 °C (32 °F) or above 40 °C (104 °F), it may damage the equipment.
8. The openings on the enclosure are for air convection, hence they protect the equipment from overheating. DO NOT COVER the openings.
9. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
10. Place the power cord such a way that people can not step on it. Do not place anything over the power cord. The voltage and current rating of the cord should be greater than the voltage and current rating marked on the product.
11. All cautions and warnings on the equipment should be noted.
12. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient over-voltage.
13. Never pour any liquid into an opening. This could cause fire or electrical shock.
14. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
15. If any of the following situations arises, get the equipment checked by service personnel:
 - a. The power cord or plug is damaged.
 - b. Liquid has penetrated into the equipment.
 - c. The equipment has been exposed to moisture.
 - d. The equipment does not work well, or you cannot get it to work according to the installation user manual.
 - e. The equipment has been dropped and damaged.
 - f. The equipment has obvious signs of breakage.
16. **CAUTION:** The computer is provided with a battery-powered real-time clock circuit. There is a danger of explosion if battery is incorrectly replaced. Replace only with same or equivalent type recommended by the manufacture. Discard used batteries according to the manufacturer's instructions.
17. THE COMPUTER IS PROVIDED WITH CD DRIVES COMPLY WITH APPROPRIATE SAFETY STANDARDS INCLUDING IEC 60825.

CLASS I LASER PRODUCT KLASS I LASER PRODUKT
--

18. This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:
 - (1). this device may not cause harmful interference, and

-
- (2). this device must accept any interference received, including interference that may cause undesired operation.
19. **CAUTION:** Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges.
20. **CAUTION:** Always ground yourself to remove any static charge before touching the motherboard, backplane, or add-on cards. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not in the chassis.
21. **CAUTION:** Any unverified component could cause unexpected damage. To ensure the correct installation, please always use the components (ex. screws) provided with the accessory box.

A Message to the Customer

Advantech Customer Services

Each and every Advantech product is built to the most exacting specifications to ensure reliable performance in the harsh and demanding conditions typical of industrial environments. Whether your new Advantech equipment is destined for the laboratory or the factory floor, you can be assured that your product will provide the reliability and ease of operation for which the name Advantech has come to be known. Your satisfaction is our primary concern. Here is a guide to Advantech's customer services.

To ensure you get the full benefit of our services, please follow the instructions below carefully.

Technical Support

We want you to get the best performance possible from your products. If you run into technical difficulties, we are here to help. For the most frequently asked questions, you can easily find answers in your product documentation. These answers are normally a lot more detailed than the ones we can give over the phone.

Please consult this manual first. If you still cannot find the answer, gather all the information or questions that apply to your problem, and with the product close at hand, call your dealer. Our dealers are well trained and ready to give you the support you need to get the most from your Advantech products. In fact, most problems reported are minor and can be easily solved over the phone.

In addition, free technical support is available from Advantech engineers every business day. We are always ready to give advice about application requirements or specific information on the installation and operation of any of our products.

Product Warranty

Advantech warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Advantech, or which have been subject to misuse, abuse, accident or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered, for example, type of PC, CPU speed, Advantech products used, other hardware and software used, etc. Note anything abnormal and list any on-screen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return material authorization) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Initial Inspection

When you open the carton, please make sure that the following materials have been shipped:

- ACP-5260 Chassis
- User's Manual
- Warranty Card
- Accessory box with a package of screws (for fastening the backplane, disk drives and the ears and handles), a 68-pin SCSI flat cable, a pair of keys, 20 rubber cushions, a pair of ears and handles, a pair of keys, a big-to-small 4-pin power wire, a spare filter.

If any of these items are missing or damaged, contact your distributor or sales representative immediately. We have carefully inspected the ACP-5260 mechanically and electrically before shipment. It should be free of marks and scratches and in perfect working order upon receipt. As you unpack the ACP-5260, check it for signs of shipping damage. (For example, damaged box, scratches, dents, etc.) If it is damaged or it fails to meet the specifications, notify our service department or your local sales representative immediately. Also, please notify the carrier. Retain the shipping carton and packing material for inspection by the carrier. After inspection, we will make arrangements to repair or replace the unit.

Contents

Chapter	1	General Information	1
1.1		Introduction	2
1.2		Specifications	2
1.3		Power Supply Options.....	3
		Table 1.1: Power Supply Options	3
1.4		Environment Specifications	3
		Table 1.2: Environment Specifications	3
1.5		Dimension Diagram.....	4
		Figure 1.1 Dimension diagram.....	4
Chapter	2	System Setup	5
2.1		Chassis Front and Rear Section	6
		2.1.1 The Front Section Includes:	6
		Figure 2.1 Front section.....	6
		2.1.2 The Rear Panel Includes:	7
2.2		Removing the Chassis Covers.....	7
2.3		Installing the Backplane	8
2.4		Installing CPU Card & Add-on Cards	9
2.5		Hold-down Clamp.....	10
2.6		Installing Disk Drives.....	11
2.7		Attaching the Ears and Handles.....	12
Chapter	3	Operation.....	13
3.1		The Front Panel	14
		3.1.1 Switch, Buttons and I/O Interfaces.....	14
		3.1.2 LED Indicators for System Status	14
		Table 3.1: LED Indicators for System Status.....	14
		3.1.3 LED Indicators for Power Voltage Status.....	15
		Table 3.2: LED Indicators for Power Voltage Status	15
3.2		The Rear Panel	16
3.3		Replacing the Cooling Fan	17
		3.3.1 Replacing the High-speed Cooling Fan	17
		3.3.2 Replacing the Rear Blower	17
		Figure 3.6 Both sides of the blower unit	18
		3.3.3 Replacing the Fan behind the SCSI Backplane.....	19
3.4		Replacing the Filter	20
		3.4.1 Replacing the Door Filters	20
		3.4.2 Replacing the Side Filter	21
3.5		Replacing the Power Supply	21
Chapter	4	Alarm Board	23
4.1		Alarm Board Layout	24
4.2		Alarm Board Specifications	24
		4.2.1 Connectors, Jumper, and Pin Definition	25
		Table 4.1: CN1, Auxiliary External Power Connector, Standard Mini 4-Pin Power Connector	25
		Table 4.2: CN4, Thermal Sensor(LM75) Connector	25
		Table 4.3: CN13, Voltage Detection Input Connector	25
		Table 4.4: CN16, Power Good Input Connector	25

	Table 4.5: CN17, Alarm Reset Connector.....	25
	Table 4.6: CN18, Output Connector to LED Board	25
	Table 4.7: CN26, External HDD LED Connector.....	25
	Table 4.8: FAN1~FAN7, Fan Connectors	25
	Table 4.9: J1, External Buzzer	25
	Table 4.10: SW1, Fan Number Select Switch	25
4.2.2	Switch Settings	26
	Table 4.11: SW1, Fan Switch Settings.....	26
4.3	Thermal Sensor	27
	Table 4.12: CN1 & CN2, Temperature Sensor Connectors	27
	Table 4.13: SW1, Thermal Sensor I.D. no. Setting	27

Chapter 5 SCSI Storage and RAID 29

5.1	6-slot SCSI SCA Backplane.....	30
5.1.1	SCSI Backplane Layout.....	30
5.1.2	Connectors and Jumpers.....	31
	Table 5.1: Connectors	31
	Table 5.2: Jumpers.....	31
5.2	SCSI Disk Drive Housing	31
5.3	Wires & Cables for SCSI Storage	32
5.4	Installing SCSI Disk Drives	32
5.4.1	Installing SCSI Disk Drives	32
5.4.2	Installing the GEM318 Driver	34
5.5	SAF-TE	35
5.6	RAID Application.....	35
	Table 5.3: LED for SCSI HDD Power and Status.....	35

Appendix A Exploded Diagram and Parts List.... 37

A.1	Exploded Diagram and Parts List	38
	Figure A.1 Exploded diagram	38
	Table A.1: Parts List	39

Appendix B Backplane & Motherboard Options . 41

B.1	Backplane Options.....	42
	Table B.1: PICMG 1.3 Backplane Options	42
	Table B.2: PICMG 1.0 Backplane Options	42
B.2	Motherboard Options	43
	Table B.3: Motherboard Options.....	43

Chapter 1

General Information

This chapter provides general information about the ACP-5260.

Sections include:

- Introduction
- Specifications
- Power supply options
- Environment specifications
- Dimension diagram

1.1 Introduction

ACP-5260 is a 5U rackmount industrial computer chassis for high-performance and high-capacity computing platforms. It meets a variety of application needs for filing, printing, e-mail and web serving. This powerful computing server includes full disk array storage for minimizing system downtime, especially in mission-critical computer telephony applications, industrial automation, and factory management. A wide range of standard computing peripherals can be integrated with the chassis to meet different application needs for operation under harsh conditions 24 hours a day, 7 days a week.

1.2 Specifications

- **Construction:** Heavy-duty steel
- **Disk Drive Capacity:** One slim-type optical disk drive bay, one 5.25" disk drive bay, and one 3.5" disk drive bay
- **RAID Storage:** Supports six 3.5" SCSI SCA 80-pin hot-swappable HDDs. Each mobile tray has a latch for protection and a pair of LEDs for displaying the HDD power and HDD activity status.
- **Security Protection:** The RAID storage system, power switch and system reset button are all behind the lockable door.
- **LED Indicators on Front Panel:** Bi-color LEDs (green/red) for power, temperature, and fan status; single-color LEDs (green) for HDD activity and Power Singles Status (+3.3 V, +5 V, +12 V, -5 V and -12 V). For the SCSI storage, each mobile tray has a single-color LED (green) that displays HDD power and a bi-color LED (blue/red) that displays HDD status.
- **Switch and Buttons on Front Panel:** Power switch, System Reset button and Alarm Reset button.
- **Front I/O Interfaces:** Dual USB and one PS/2 keyboard connector
- **Cooling System:** Three 12 cm x 12 cm x 2.54 cm (114 CFM) hot-swappable cooling fans in the middle; two 8 cm x 8 cm x 2.54 cm (47 CFM) fan behind the SCSI backplane; two adjustable blowers (25 CFM) on the rear section.
- **Air Filters:** Two filters behind the front door, one 155 mm x 100 mm, and one 176 mm x 142 mm; one filter (170 mm x 42 mm) on the inside of the right plate.
- **Vents:** On the front panel and right side of the chassis
- **Slide Rails:** General Device C-300 series supported
- **Weight:** 30 kg (66 lbs)
- **Dimensions (W x H x D):** 482 x 222 x 660 mm (19" x 8.75" x 26")
- **Chassis Color:** Black

1.3 Power Supply Options

Table 1.1: Power Supply Options

Model Name	1757001760	1757001761	1757001677
Watt	460 W (ATX, PFC) (1+1 redundant)	570 W (ATX, PFC) (2+1 redundant)	810 W (ATX, PFC) (3+1 redundant)
Input rating	100 ~ 240 Vac (Full range)	115 ~ 230 Vac (Full range)	115 ~ 230 Vac (Full range)
Output voltage	+5 V @ 40 A, +3.3 V @ 30 A, +12 V @ 32 A, -5 V @ 0.8 A, -12 V @ 1 A, +5 V _{SB} @ 2 A	+5 V @ 50 A, +3.3 V @ 40 A, +12 V @ 34 A, -5 V @ 1 A, -12 V @ 1 A, +5 V _{SB} @ 1.2 A	+5 V @ 75 A, +3.3 V @ 60 A, +12 V @ 51 A, -5 V @ 1.5 A, -12 V @ 1.5 A, +5 V _{SB} @ 1.6 A
Minimum load	+5 V @ 5 A, +3.3 V @ 1 A, +12 V @ 2.5 A, +5 V _{SB} @ 0.1 A	+5 V @ 6 A, +3.3 V @ 2 A, +12 V @ 3 A, -12 V @ 0.1 A, -5 V @ 0.1 A, +5 V _{SB} @ 0.1 A	+5 V @ 9 A, +3.3 V @ 3 A, +12 V @ 4.5 A, -12 V @ 0.15 A, -5 V @ 0.15 A, +5 V _{SB} @ 0.15 A
MTBF	100,000 hours @ 25°C	100,000 hours @ 25°C	100,000 hours @25°C
Safety	UL/TUV/CB/CCC	UL/cUL/CB/CCC	UL/cUL/CB/CCC

1.4 Environmental Specifications

Table 1.2: Environment Specifications

Environment	Operating	Non-operating
Temperature	0 to 40°C (32 to 104°F)	-20 to 60°C (-4 to 140°F)
Humidity	10 to 85% @ 40°C, non-con- densing	10 to 95% @ 40°C, non-con- densing
Vibration	1G rms	2 G
Shock	10G with 11 ms duration, half sine wave	30 G
Safety	CE compliant	

1.5 Dimension Diagram

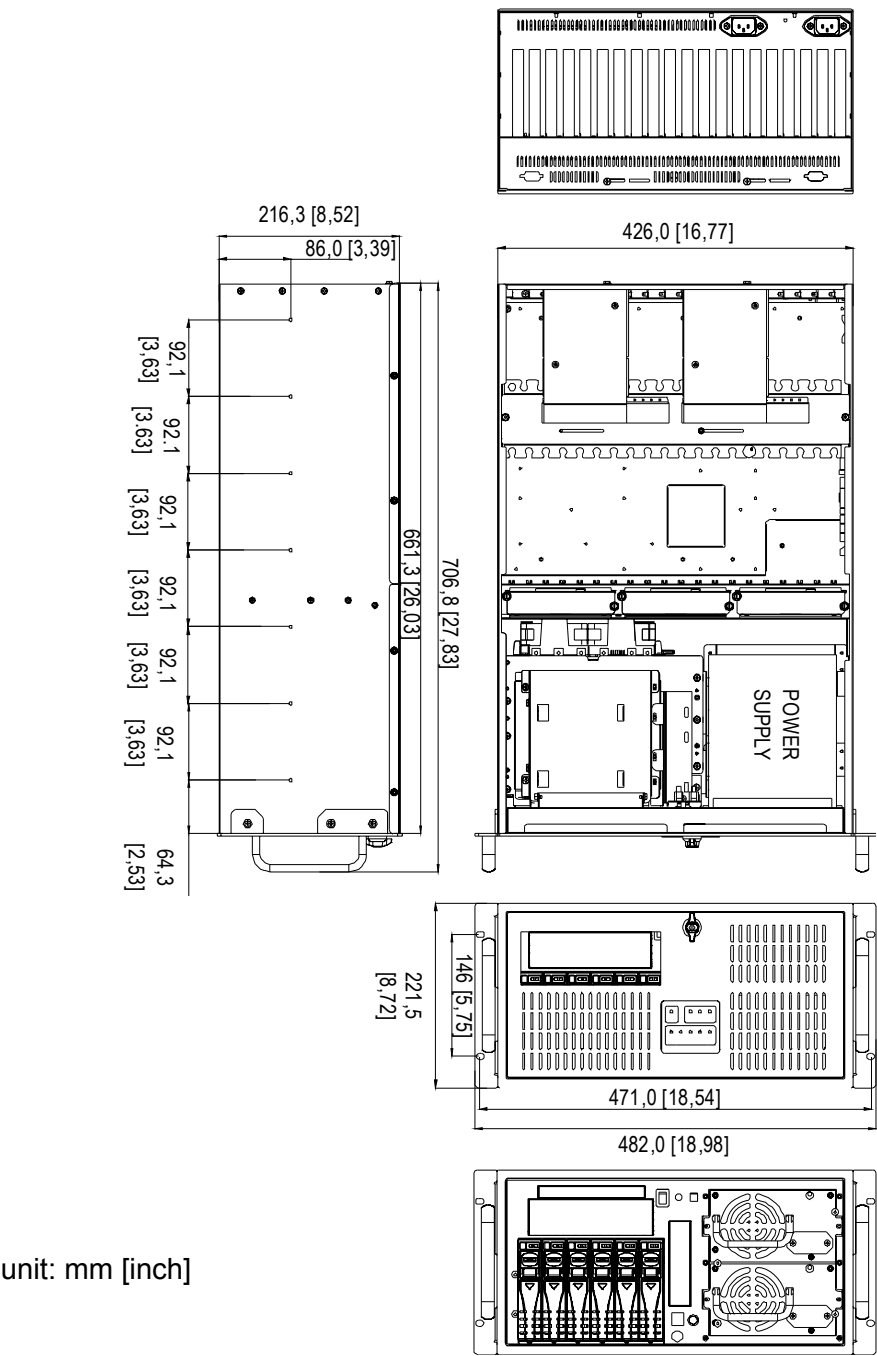


Figure 1.1 Dimension diagram

Chapter 2

System Setup

This chapter introduces the installation process.

Sections include:

- Chassis front and rear section
- Installing the backplane
- Installing the CPU card or add-on card
- Installing disk drives
- Attaching the ears and handles

The following procedures instruct users to install the backplane, add-on cards, and disk drives on the ACP-5260 chassis. Please refer to Appendix A, Exploded Diagram, for all the detailed part names of ACP-5260.

Note! *Use caution when installing or operating the components with the chassis open. Be sure to turn off the power, unplug the power cord and ground yourself by touching the metal chassis before you handle any components inside the machine.*



2.1 Chassis Front and Rear Sections

The ACP-5260 is composed of two sections, the front section and the rear section. Each of them has its own top cover.

2.1.1 The Front Section Includes:

1. A SCSI disk drive housing with six mobile HDD trays on the front left. For IDE devices, there are one slim-type optical disk drive and one 5.25" disk drive bay above the SCSI mobile trays, and one 3.5" disk drive bay at the right of the SCSI mobile trays.
2. Dual cooling fans behind the SCSI backplane for cooling the SCSI HDDs.
3. Front door with LED panel and user-friendly rotary lock. User can close the door with or without the key.
4. Hot-swappable redundant power supply.
5. A pair of ear handles which users can simply fasten to the front-right and front-left edges of the chassis with the six screws provided.
6. Filters located behind the front door and right side of the chassis.



Figure 2.1 Front section

2.1.2 The Rear Panel Includes:

1. Three high-speed cooling fans in the middle, and two blowers on the rear side
2. Backplane
3. Add-on cards
4. Thermal sensor
5. Alarm board
6. Hold-down clamp and blower brackets

2.2 Removing the Chassis Covers

There are dual top covers for ACP-5260, top front cover and top rear cover. Both are fixed to the chassis with four screws, two on each side. Please refer to Figure 2.2 & Figure 2.3 and proceed as follows.

1. Detach the four screws on both sides.
2. Remove the top cover.



Figure 2.2: Removing the top front cover



Figure 2.3: Removing the top rear cover

2.3 Installing the Backplane

ACP-5260 supports backplanes of up to 20 slots. To install the backplane, please refer to Figure 2.4 and proceed as follows:

1. Remove the top rear chassis cover, and then dismantle the hold-down clamp and the blower units by removing the four screws.
2. Put the backplane in the proper location and attach the supplied EMI spring shielding with the screws provided. Then fasten it onto the chassis.
3. For the PICMG 1.0 BACKPLANE, connect the orange-white wire from connector “HCN1” on the backplane to connector “CN21” on the CPU card.
4. Connect the 24-pin or 20-pin ATX power connector and the 4-pin +12 V power connector from the power supply to the backplane. (For the PICMG 1.0 BACKPLANE, the 4-pin +12 V power connector is connected to the CPU card.)
5. Replace the hold-down clamp and the blower units, and fasten them to the chassis.
6. Return the top rear chassis cover and fasten it.

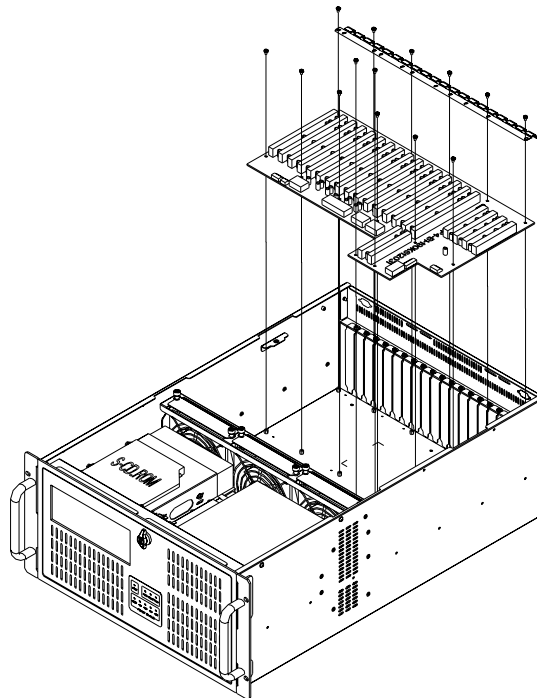


Figure 2.4: Installing the backplane

2.4 Installing CPU Card & Add-on Cards

ACP-5260 supports up to 20 add-on cards. To install a CPU card or add-on card, please proceed as follows:

1. Select a vacant PICMG slot for the full-length CPU card, or a PCI/ISA slot for other add-on cards. Then, remove the corresponding I/O bracket attached to the rear plate of the chassis.
2. Insert the CPU card (with CPU, CPU cooler, RAM, and necessary cables installed), or add-on card vertically into the proper slot (See Figure 2.5). For full-length cards, please make sure that the card bracket has been inserted properly and the other edge of the card has been inserted into the plastic guiding fillister. Fasten the card with the screw on top of the I/O bracket.
3. Repeat Steps 2 and 3 if there is more than one CPU card or add-on card.
4. Connect the 9-pin USB wire, power switch wire and system reset switch wire from the chassis to the CPU card.
5. For the PICMG1.0 Backplane, connect the orange-white wire from the connector "CN20" on the CPU card to the connector "HCN1" on the backplane. Connect the 4-pin +12 V power connector from the power supply to the CPU card.
6. There are two rows of notches on both sides of the hold-down clamp for inserting rubber cushions into. One side is for PCI cards, while the other side is for ISA cards. Depending on the card height, the cushions can be inserted upward or downward. After the rubber cushions have been inserted into the notches, they will stabilize the add-on cards to protect them from shock and vibration.
7. Replace the hold-down clamp and blower brackets and fasten them.

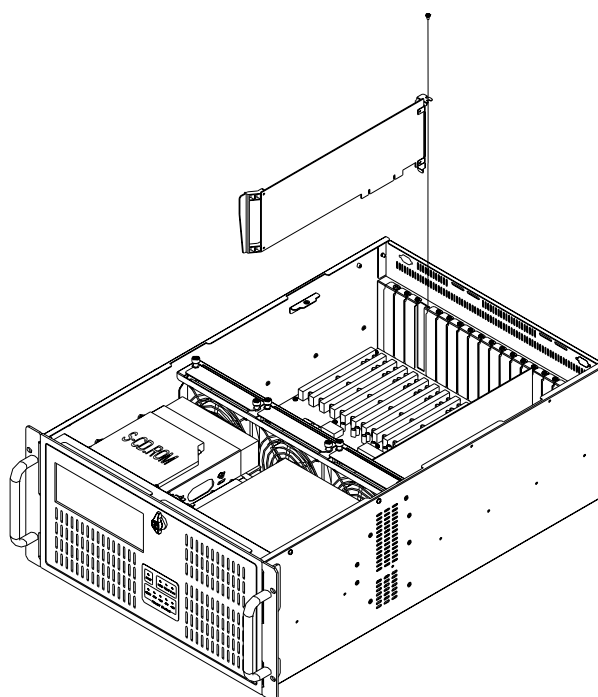


Figure 2.5: Installing a full-length card

2.5 Hold-down Clamp

The hold-down clamp protects all the cards from vibration and shock. After installing all the cards, re-fasten the hold-down clamp. Please refer to the following steps.

1. After plugging in the CPU card and add-on cards, please insert the rubber cushions provided into the notches of the hold-down clamp, and adjust them to the placement of the cards. The cushions offer these cards the protection against shock and vibration.
2. Put the hold-down clamp back into its original position.
3. Secure the hold-down clamp to the chassis with the four screws.

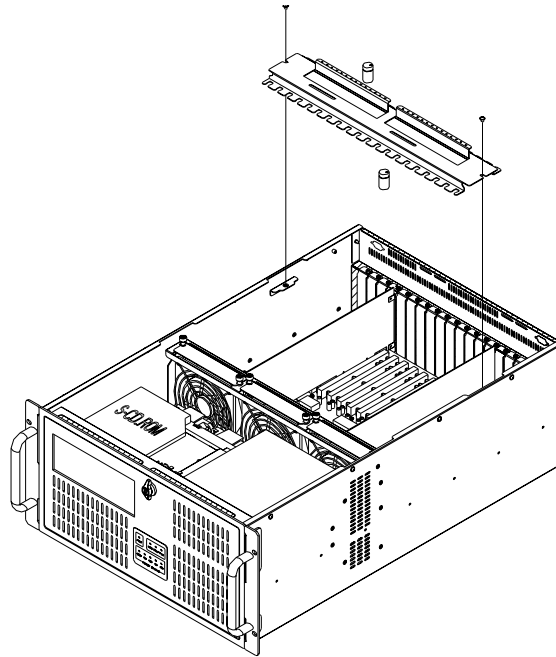


Figure 2.6: Installing hold-down clamp

2.6 Installing Disk Drives

The APC-5260 supports both IDE and SCSI storage devices. We introduce the IDE disk drive installation procedure here. For installing a SCSI HDD, please refer to Chapter 5 for detailed SCSI information and installation procedure.

The IDE disk drive housing supports one slim type optical disk drive, one 5.25" and one 3.5" disk drive bay. The slim type optical disk drive and the 5.25" disk drive bay are located above the SCSI disk drive housing. The 3.5" disk drive bay is in the front middle section. Please follow these steps for installation.

1. For installing the 3.5" HDD or FDD, simply release the two screws on top of the disk drive holder located in the middle of the front panel.
2. Insert the disk drive into the proper location in the drive housing and secure them with the screws provided.
3. To install the 5.25" disk drive, you need to release the 3.5" disk drive holder first. Then, loosen the four screws on the 5.25" disk drive housing.
4. Insert the disk drive in the proper location in the drive housing, and secure it with the screws provided.
5. To install the slim type optical disk drive, first find the small converter in the accessory box. Connect the converter to the rear of the optical disk drive and fasten it with the two screws provided. Then simply fix the optical disk drive to the drive housing with the four screws provided.
6. Connect the suitable cables from the CPU card to the 3.5" HDD, FDD or the optical disk drive. Then plug the 4-pin power connector into each disk drive.
7. Put the disk drive housing back in the correct position and fasten it with the screws.

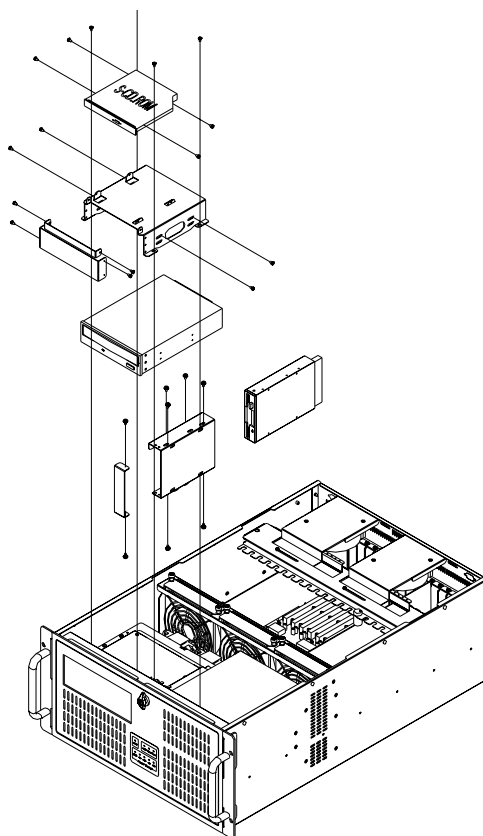


Figure 2.7: Installing IDE disk drives

2.7 Attaching the Ears and Handles

There is a pair each of ears and handles in the accessory box. If you need to install the chassis in a rack, please fasten the ears and handles to the front-right and front-left edges with the screws provided.

Chapter 3

Operation

This chapter introduces the system operation information.

Sections include:

- The front panel
- The rear panel
- Replacing the cooling fans
- Replacing the filters
- Replacing the power supply

3.1 The Front Panel

On the middle of the front panel, there is one Power On/Off switch, one System Reset button, one Alarm Reset button, a dual USB port, and a PS/2 connector. There are nine LED indicators on the lockable front door. Their individual functions are described as below.

3.1.1 Switch, Buttons and I/O Interfaces

Momentary Power switch: Press this button to turn the system power on or off. Please use system shutdown or press this switch for few seconds to turn off the system ATX power.

System Reset button: Press the button to reboot the system.

Alarm Reset button: Whenever a fault occurs in the system (e.g., fan failure or the temperature in the chassis is too high), the audible alarm will be activated. Pressing this button will stop the alarm from beeping.

Dual USB port: For connecting a wide range of USB devices for data transfer, backup or input.

PS/2 connector: For connecting a PS/2 keyboard and mouse by an optional Y-cable. Or connecting a PS/2 keyboard only. It depends on the CPU card feature.

3.1.2 LED Indicators for System Status

The LED display on the front door shows a series of indicators that are grouped into two categories for System Status and Power Voltage Status.



Figure 3.1: Front LED panel

The following table describes the LED indicators for System Status.

Table 3.1: LED Indicators for System Status

LED	Description	Green	Red
PWR	System Power	Normal	Abnormal
HDD	Hard Disk Drive Activity	Data Access	No light
TEMP	Temperature in the Chassis	Normal	Abnormal
FAN	Cooling Fan	Normal	Abnormal

When the system power is on, the PWR LED is always GREEN.

When the PWR LED is RED, it indicates a redundant power supply module failure. To stop the alarm beep, press the Alarm Reset button. Examine the redundant power supply module right away and replace the failed module with a good one.

When the FAN LED is RED, it indicates a failed cooling fan, and the alarm is also activated. To stop the alarm beep, press the Alarm Reset button and then replace the failed fan with a good one immediately.

If the TEMP LED is RED, it means that the inside of the chassis is overheated. An audible alarm will be activated. To stop the alarm beep, press the Alarm Reset button. Inspect the fan filter and the rear section of the chassis immediately. Make sure the airflow inside the chassis is smooth and not blocked by dust or anything else.

3.1.3 LED Indicators for Power Voltage Status

The following table is the individual LED which indicates the status of the backplane voltage signals.

Table 3.2: LED Indicators for Power Voltage Status

LED	Description	LED on	LED off
+3.3 V	+3.3 V signal	Normal	Abnormal
+5 V	+5 V signal	Normal	Abnormal
+12 V	+12 V signal	Normal	Abnormal
-5 V	-5 V signal	Normal	Abnormal
-12 V	-12 V signal	Normal	Abnormal

When an LED fails to light up, it means there is a problem with one of the voltage signals. Please check that the power supply connector is properly attached to the backplane. If the problem persists, consult with an experienced technician.

3.2 The Rear Panel

There are two reserved 9-pin D-SUB openings and dual AC inlets on the rear panel. For B/P version, it includes the B/P rear plate with 20-slot I/O brackets (Figure 3.2). For M/B version, it includes the M/B rear plate with 7-slot I/O brackets and the ATX M/B I/O cover (Figure 3.3). The M/B version is especially customized by customers' request.

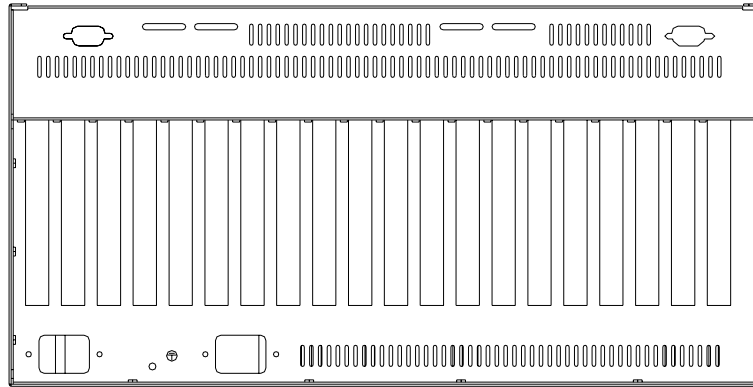


Figure 3.2: Rear panel of backplane version

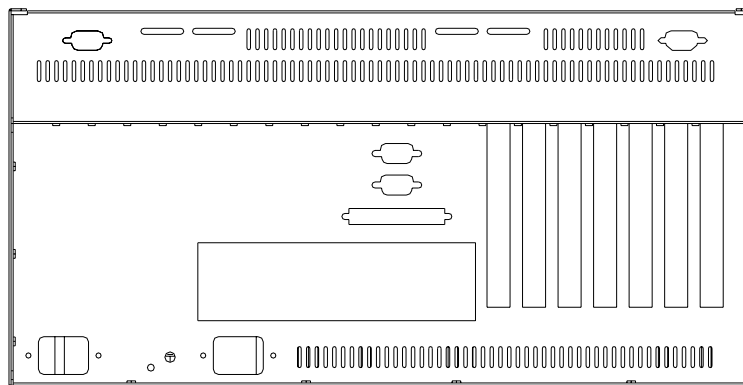


Figure 3.3: Rear panel of motherboard version

3.3 Replacing the Cooling Fan

There are seven cooling fans inside the chassis. All of the cooling fans are easily maintained. Three of the high-speed cooling fans are located in the middle of the chassis. There are two blowers on the rear of chassis. Another two cooling fans are located behind the SCSI backplane which was mentioned in Chapter 2.1.1. The fans provide the system with ample cooling by blowing air toward the rear. To replace the cooling fans, please proceed according to the instructions below.

3.3.1 Replacing the High-speed Cooling Fan

1. Remove the top front chassis cover.
2. Loosen the two thumbscrews on top of the fan unit and then gently pull it out. (See Figure 3.4). This will disconnect the cooling fan power connector.
3. Replace the cooling fan with a new one.
4. Fix the new cooling fan in place by tightening the thumbscrews.
5. Replace the top front chassis cover and fasten it.



Figure 3.4: Replacing the cooling fan

3.3.2 Replacing the Rear Blower

1. Remove the top rear chassis cover.
2. Loosen the screws on the blower unit, one on the rear panel, and one on the hold down clamp. (see Figure 3.5)
3. Unplug the blower power connector from the alarm board, and release the blower power wire from the tie mount.
4. Detach the blower from the bracket by loosening the screws. (see Figure 3.6)
5. Replace the failed blower with a new one. Please note that the blower should be oriented so that the airflow is directed toward the back of the chassis.
6. Secure the new blower to the bracket and then fasten the blower unit back onto the chassis. The blower unit is uniquely designed to provide the best airflow for any card configuration. You can adjust its position along with the length of the guide rail bracket.
7. Plug the blower power connector to the alarm board and fix the wire into the tie mount.
8. Replace the top rear chassis cover and fasten it to the chassis.

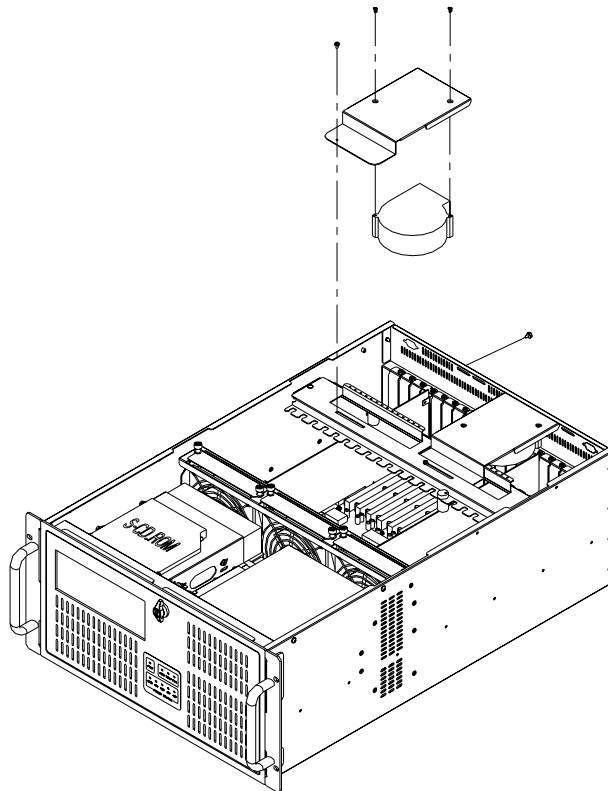


Figure 3.5: Removing the blower unit

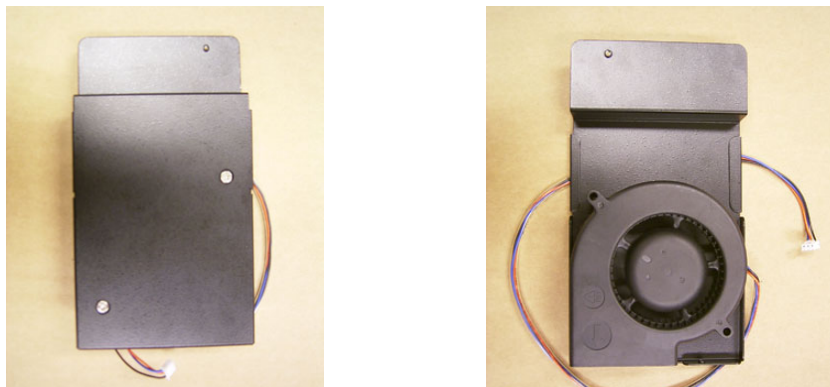


Figure 3.6 Both sides of the blower unit

3.3.3 Replacing the Fan behind the SCSI Backplane

1. Remove the top front chassis cover.
2. Remove the two high-speed cooling fans behind the SCSI disk drive housing first so that there is enough room for your hand to reach the fan behind the SCSI backplane. (See Figure 3.7).
3. Lift the tab on top of the fan unit so that the fan detaches from the fan enclosure. Figure 3.9 is another view that shows fan removal. Using this way, you need to remove the whole SCSI disk drive housing first. But it's not necessary to take out the SCSI housing to replace the fan.
4. Unplug the fan wire on the alarm board.
5. Put a new fan into the fan enclosure carefully until it is locked in by the tab. Be sure to install it securely in the enclosure.
6. Plug the fan wire into the fan connector on the SCSI backplane.
7. Replace the two high-speed cooling fans and fasten them.
8. Replace the top front chassis cover.



Figure 3.7: Remove the two high-speed cooling fans



Figure 3.8: Lift the tab on top of the fan unit

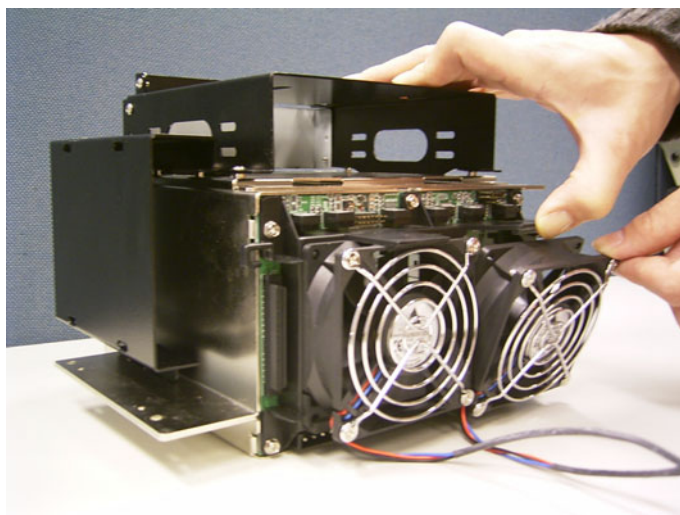


Figure 3.9: Replacing the fan behind the backplane

3.4 Replacing the Filter

The filter functions to block dust or particles from the work environment and to extend the longevity of the system. The filter should be replaced periodically. There are two filters behind the front door and one filter on right side of the chassis. To replace the filter, please proceed as follows.

3.4.1 Replacing the Door Filters

1. Open the front door.
2. Loosen the two screws located on each filter cover.
3. Replace the filter with a new one.
4. Fasten the filter covers.

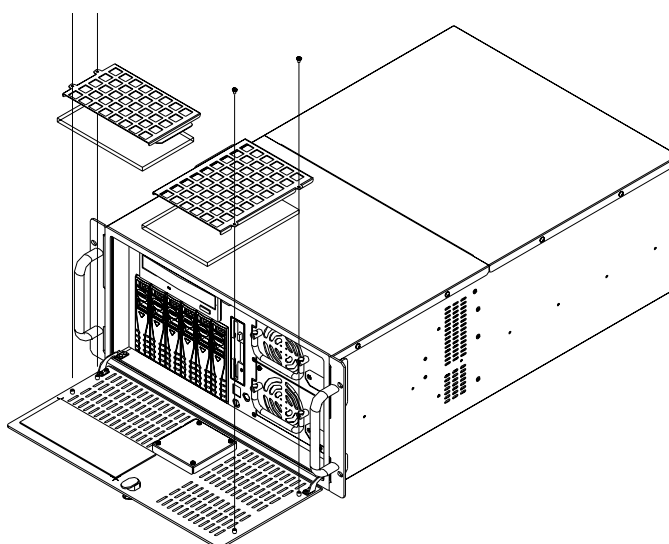


Figure 3.10: Replacing the front door filter

3.4.2 Replacing the Side Filter

1. Open the top front cover.
2. Find the filter cover on the right side plate and simply take out the filter. (See Figure 3.11).
3. Replace the filter with a new one.
4. Replace the top front cover and then fasten it.

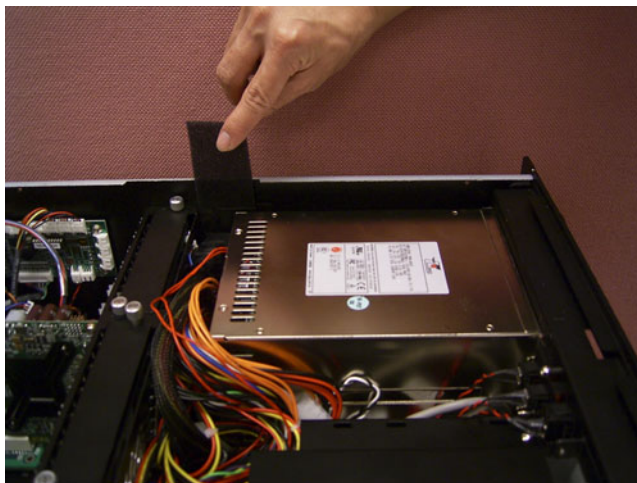


Figure 3.11: Replacing the side filter

3.5 Replacing the Power Supply

ACP-5260 supports various power supply models. To replace the power supply module, please proceed as follows.

1. Turn off the failed power supply module.
2. Loosen the screw on the failed module and then gently pull the module out by the handle (see Figure 3.12 and Figure 3.13).
3. Make sure that the new power supply module is the same rating as the currently installed one.
4. Slide the power supply module inward until it locks into the right position, then tighten the screws.
5. Return the handle to its original place.

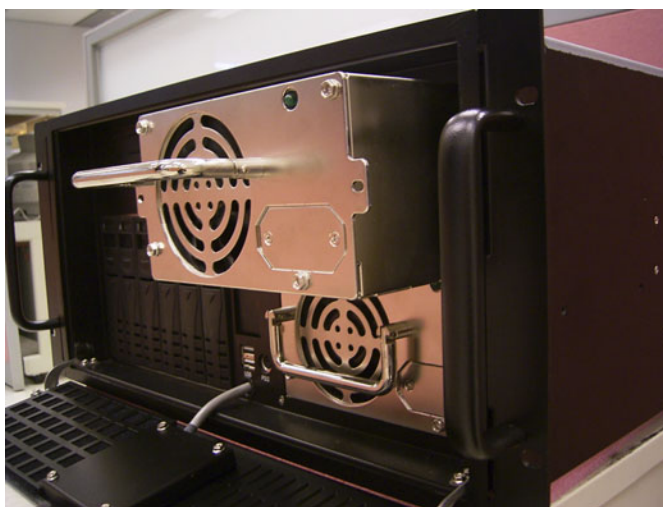


Figure 3.12: Replacing the module of 460W redundant power

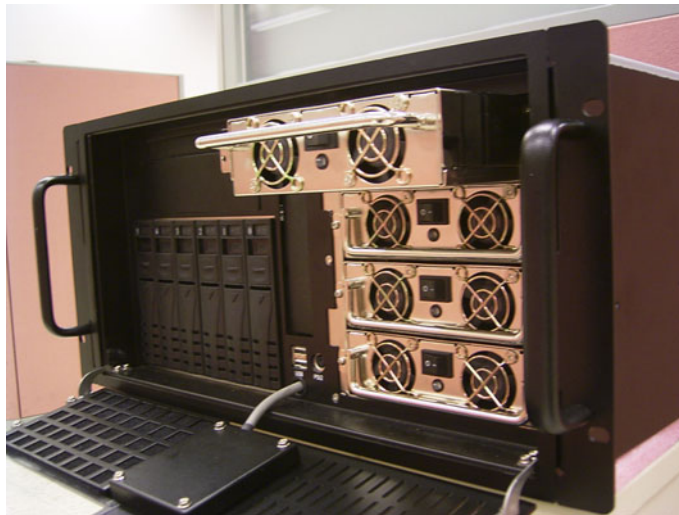


Figure 3.13: Replacing the module of 570W / 810W redundant power

Note! When you plug the two power cords into the socket, please make sure they are oriented in the same direction. (See Figure 3.14)



Figure 3.14: Orientation of power cord plugs

Chapter 4

Alarm Board

This chapter introduces the alarm board and thermal sensor specifications.

Sections include:

- Alarm Board Layout
- Alarm Board Specifications
- Thermal Sensor
- Sensor I.D. Number Setting

The alarm board is located on the right side near the rear section. The alarm board sounds an audible alarm when:

- Any power supply module or redundant power supply fails
- One of the system cooling fans or blowers fails.
- Internal temperature of the chassis reaches 50°C (default setting)

To stop the alarm beep, simply press the Alarm Reset button on the front panel and then take the necessary action to fix it.

4.1 Alarm Board Layout

The layout and detailed specifications of the alarm board are given below:

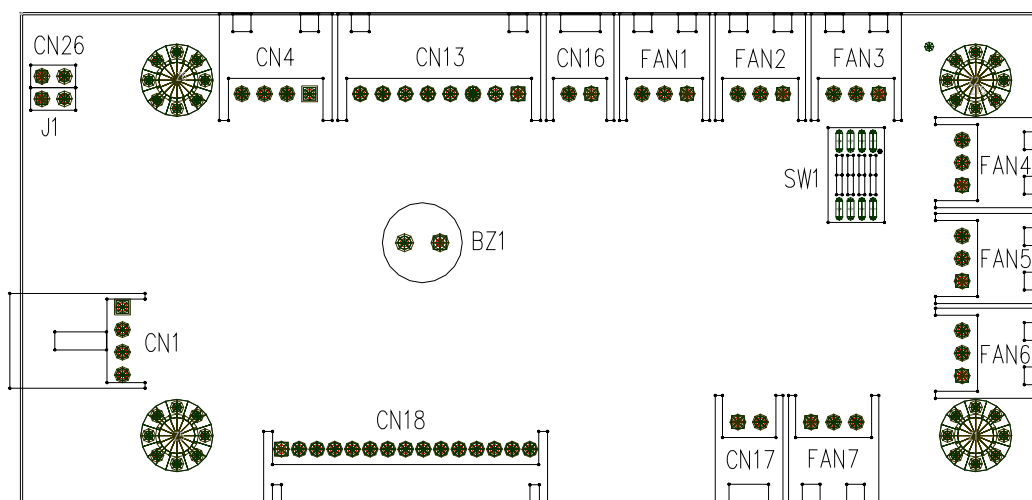


Figure 4.1: Alarm board layout

4.2 Alarm Board Specifications

Input Power: +5 V, +12 V

Input Signals:

- 7 FAN connectors
- One thermal board connector (support up to 8 thermal sensors in series)
- One power good input
- One alarm reset input
- One voltage signal connector (connect from backplane, includes ± 12 V, ± 5 V, +3.3 V)
- One Hard Disk LED connector (connect from CPU card)

Output Signals:

- One LED board connector
- One Buzzer output

4.2.1 Connectors, Jumper, and Pin Definition

Table 4.1: CN1, Auxiliary External Power Connector, Standard Mini 4-Pin Power Connector

Pin 1	+12 V	Pin 3	GND
Pin 2	GND	Pin 4	+5 V

Table 4.2: CN4, Thermal Sensor(LM75) Connector

Pin 1	+5 V	Pin 3	T_SDAT
Pin 2	T_SCLK	Pin 4	GND

Table 4.3: CN13, Voltage Detection Input Connector

Pin 1	+5 Vsb	Pin 5	+5 V
Pin 2	GND	Pin 6	+3.3 V
Pin 3	GND	Pin 7	-12 V
Pin 4	-5 V	Pin 8	+12 V

Table 4.4: CN16, Power Good Input Connector

Pin 1	Power Good A	Pin 2	GND
-------	--------------	-------	-----

Table 4.5: CN17, Alarm Reset Connector

Pin 1	ALARM RESET	Pin 2	GND
-------	-------------	-------	-----

Table 4.6: CN18, Output Connector to LED Board

Pin 1	GND	Pin 9	Temperature Good LED
Pin 2	Power Good +5 V	Pin 10	Temperature Fail LED
Pin 3	Power Good +12 V	Pin 11	FAN Good LED
Pin 4	Power Good -5 V	Pin 12	FAN Fail LED
Pin 5	Power Good -12 V	Pin 13	N/A
Pin 6	HDD_1	Pin 14	Power Good +3.3 V
Pin 7	Power Good LED	Pin 15	Power Good +5 Vsb
Pin 8	Power Fail LED		

Table 4.7: CN26, External HDD LED Connector

Pin 1	HLED_ACT	Pin 2	N/A
-------	----------	-------	-----

Table 4.8: FAN1~FAN7, Fan Connectors

Pin 1	GND	Pin 3	FAN_DEC
Pin 2	+12 V		

Table 4.9: J1, External Buzzer

Pin 1	Buzzer	Pin 2	+5 V
-------	--------	-------	------

Table 4.10: SW1, Fan Number Select Switch


Pin 1	GND	Pin 5	GND
Pin 2	FAN_SEL1	Pin 6	FAN_SEL3
Pin 3	GND	Pin 7	GND
Pin 4	FAN_SEL2	Pin 8	RESET

4.2.2 Switch Settings

The alarm board is designed to connect with up to 7 fans. User can set the fan number by adjusting the switch, SW1, on the alarm board.

Table 4.11: SW1, Fan Switch Settings

FAN NUMBER	SW 1-1	SW 1- 2	SW 1- 3	SW 1- 4
0	OFF	OFF	OFF	OFF
1	ON	OFF	OFF	OFF
2	OFF	ON	OFF	OFF
3	ON	ON	OFF	OFF
4	OFF	OFF	ON	OFF
5	ON	OFF	ON	OFF
6	OFF	ON	ON	OFF
7 (default)	ON	ON	ON	OFF

Note!  Connect the fan connectors in the correct sequence: if two fans are set on SW1, the correct method is to connect them into connectors FAN1 and FAN2. If the two fans are connected to other fan connectors, out of sequence, such as FAN1 and FAN3 or FAN2 and FAN3 or FAN3 and FAN4, instead of FAN1 and FAN2, then the alarm will not function correctly.

4.3 Thermal Sensor

There is a thermal sensor located on the rear plate of the chassis. It is attached to the upper left corner of the chassis back plate. Please refer to Figure 4.2 for a diagram of the thermal sensor module layout.

The default sensor I.D. number is 1. Please refer to Table 4.13 to set the sensor I.D. number by adjusting the switch, SW1, on the sensor module.

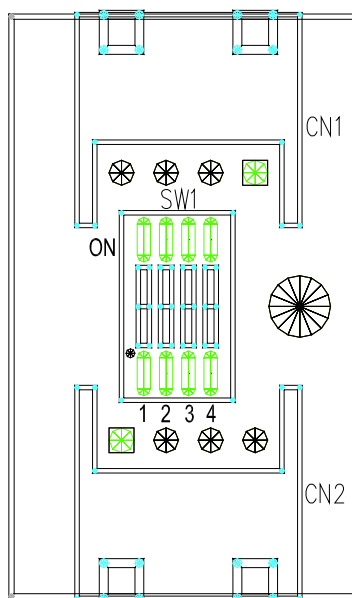


Figure 4.2: Thermal sensor module

Table 4.12: CN1 & CN2, Temperature Sensor Connectors

CN1 & CN2: Temperature Sensor Connector

Pin 1	+5 V	Pin 3	T_SDAT
Pin 2	T_SCLK	Pin 4	GND

Table 4.13: SW1, Thermal Sensor I.D. no. Setting

Sensor I.D. No.	SW 1 -1	SW 1 - 2	SW 1 - 3	SW 1 - 4
1 (default)	OFF	OFF	OFF	ON
2	OFF	OFF	ON	ON
3	OFF	ON	OFF	ON
4	OFF	ON	ON	ON
5	ON	OFF	OFF	ON
6	ON	OFF	ON	ON
7	ON	ON	OFF	ON
8	ON	ON	ON	ON

Chapter 5

SCSI Storage and RAID

This chapter introduces the SCSI storage structures.

Sections include:

- 6-slot SCSI SCA backplane
- SCSI disk drive housing
- Installing SCSI disk drives

There is a SCSI SCA backplane fixed behind the SCSI disk drive housing. This backplane provides six 80-pin SCSI connectors, so users can install up to six 80-pin SCSI HDDs. Please see the relevant details below.

5.1 6-slot SCSI SCA Backplane

5.1.1 SCSI Backplane Layout

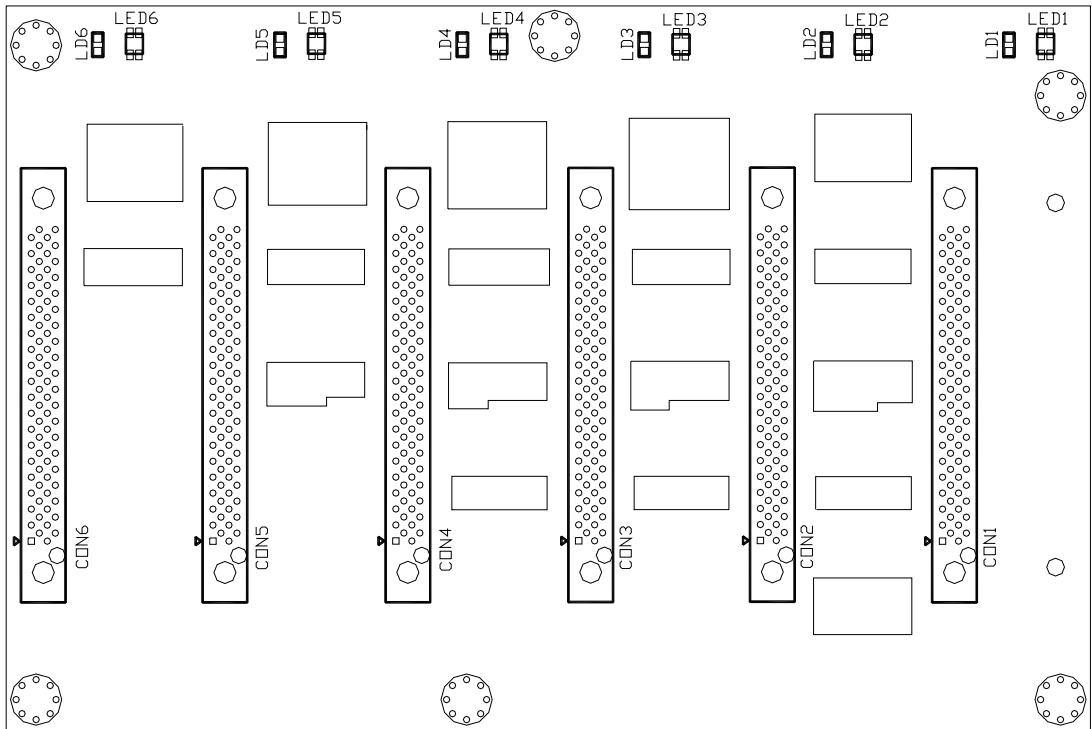


Figure 5.1: Front side layout of the SCSI backplane

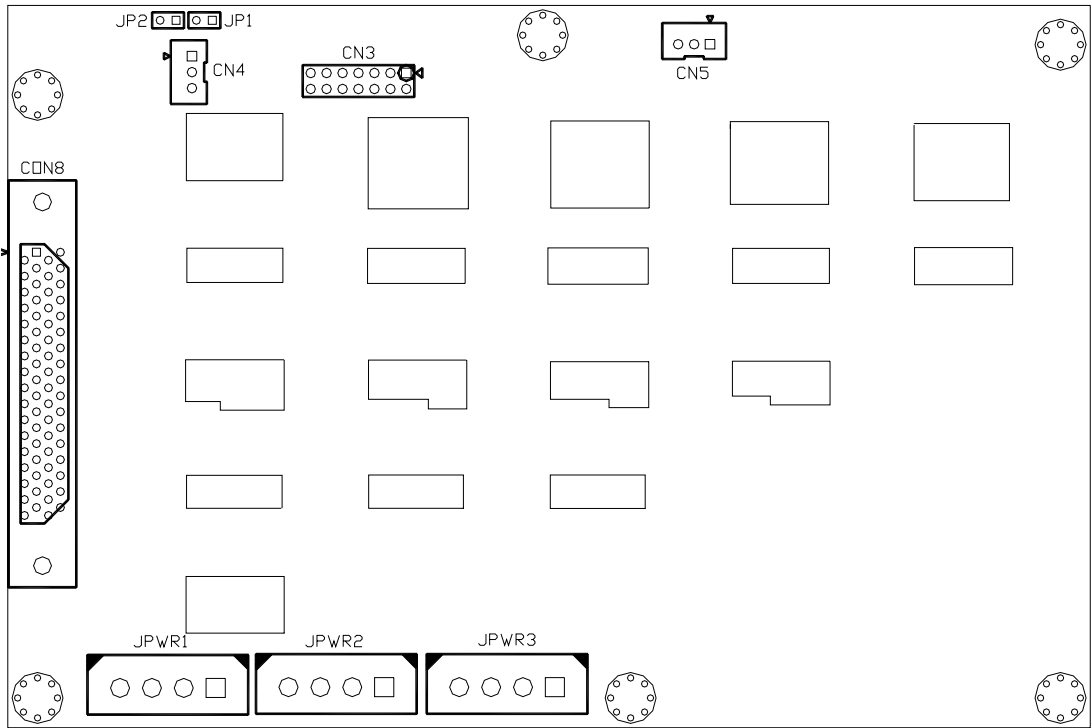


Figure 5.2: Back side layout of the SCSI backplane

5.1.2 Connectors and Jumpers

Table 5.1: Connectors

CON1 ~ CON6	80-pin Ultra320 SCSI connector
CON8	68-pin Ultra320 SCSI connector
JPWR1 ~ JPWR3	4 Pin Power Connector
CN3	For SCSI HDD status alarm function: Pin 1, 3, 5, 7, 9, 11 are the status signals for HDD1 ~ HDD6; Pin 2, 4, 6, 8, 10, 12 are the alarm signals for HDD1 ~ HDD6; Pin 13 and 14 are GND
CN4 ~ CN5	Fan Connectors
LD1 ~ LD6	SCSI HDD0 ~ HDD5 power LED (green)
LED1 ~ LED6	SCSI HDD0 ~ HDD5 Bi-Color LED (blue/red): HDD Activity: blue; HDD Fault: red; Rebuild: pink blink; No error: slow blink (1/sec); Identification: fast blink (~3/sec)

Table 5.2: Jumpers

HDD spin up options	JP1	JP2
Spin up when power is applied	Open	Open
Spin up after delay	Open	Close
Spin up on command mode	Close	Open
Reserved	Close	Close

5.2 SCSI Disk Drive Housing

The SCSI disk drive housing is under the 5.25" IDE disk drive bay. If you need to take out the SCSI disk drive housing from the chassis, please be careful to first release all the relevant wires/cables and fans behind the IDE disk drive and the SCSI disk drive housing, as well as the SCSI mobile trays, or housing removal may be difficult, or system data may even be harmed. When in doubt, please consult an experienced technician.

After all the relevant wires/cables, fans, and mobile trays have been disconnected, release the four screws with the rubber cushions on the SCSI disk drive housing, then lift it up so that you can take out the SCSI disk drive housing.

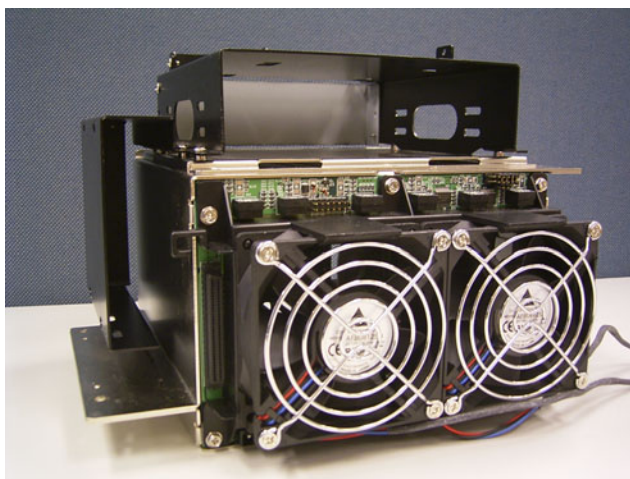


Figure 5.3: SCSI disk drive housing

5.3 Wires & Cables for SCSI Storage

There is one 68-pin SCSI flat cable in the accessory package. This cable is for connecting the add-on SCSI RAID card/controller and the SCSI backplane. The power wires of the dual fans should be connected to the alarm board. The three 4-pin power connectors on the rear side of the SCSI backplane are for connecting the power wires from the power supply.

Note! *Please be sure to connect these wires and cables well before you install any SCSI HDD. When you have to take out the SCSI disk drive housing from the chassis, please disconnect the wires and cables first.*



Figure 5.4: Wires and Cables for SCSI housing

5.4 Installing SCSI Disk Drives

5.4.1 Installing SCSI Disk Drives

Note! *There are various types of 3.5" SCSI HDDs on the market. If you're not sure which type to choose, please consult with an experienced technician.*



Please follow the installation procedures below.

1. Open the front door by turning the rotary lock.
2. Push up the latch on the mobile tray (See Figure 5.5).
3. Press down the handle of the mobile tray and pull it out as far as it will go. Then completely take out the tray (Refer to Figure 5.6).
4. Install a 3.5" x 1"-high SCSI SCA 80-pin HDD by fastening the four screws.
5. Return the mobile tray with SCSI HDD to the disk drive housing and push it in by the handle until it is locked into the original position.
6. Push down the latch to lock the tray into place.

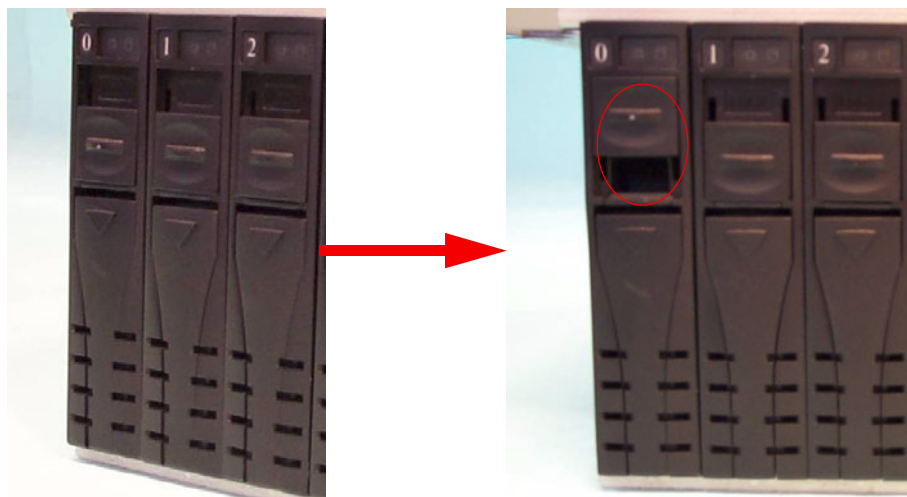


Figure 5.5: Pushing up the latch



Figure 5.6: Removing the mobile tray

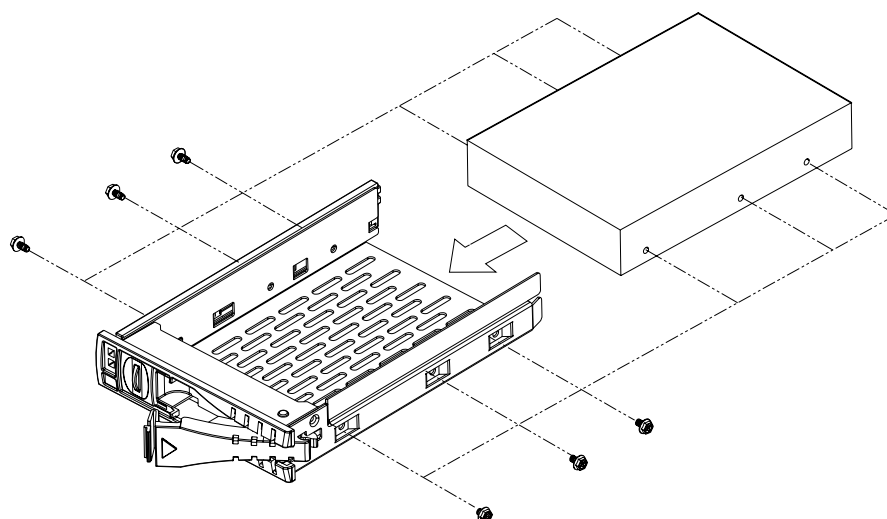
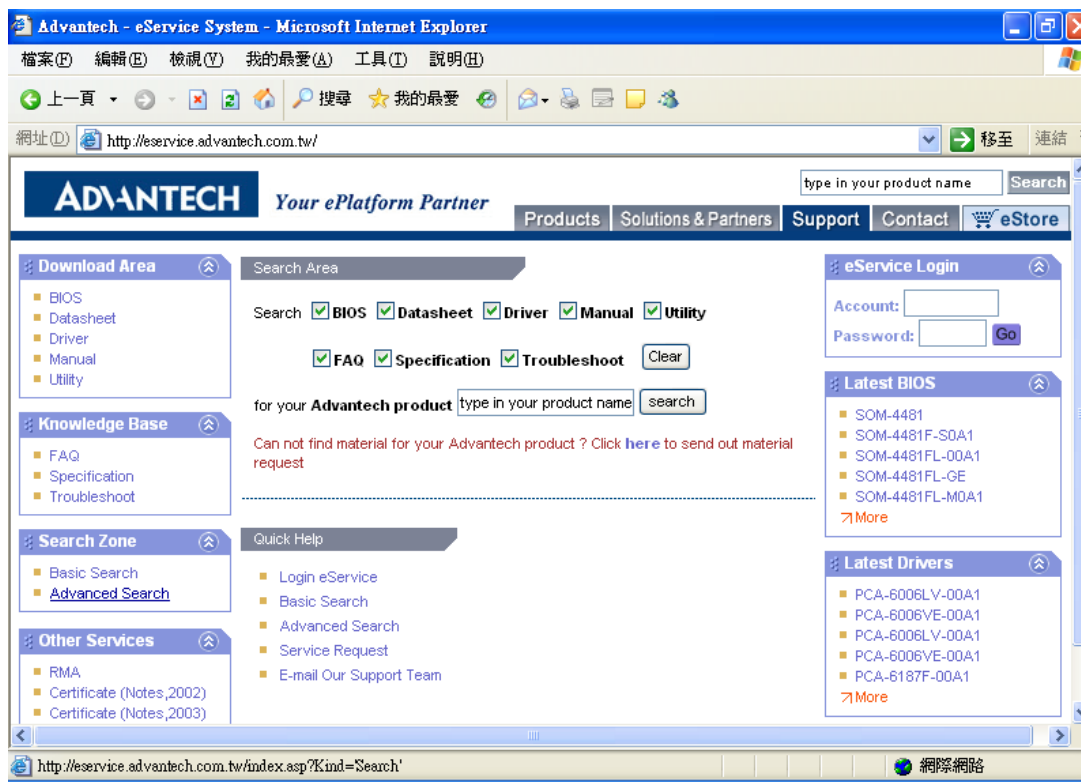



Figure 5.7: Installing a SCSI SCA 80-pin disk drive

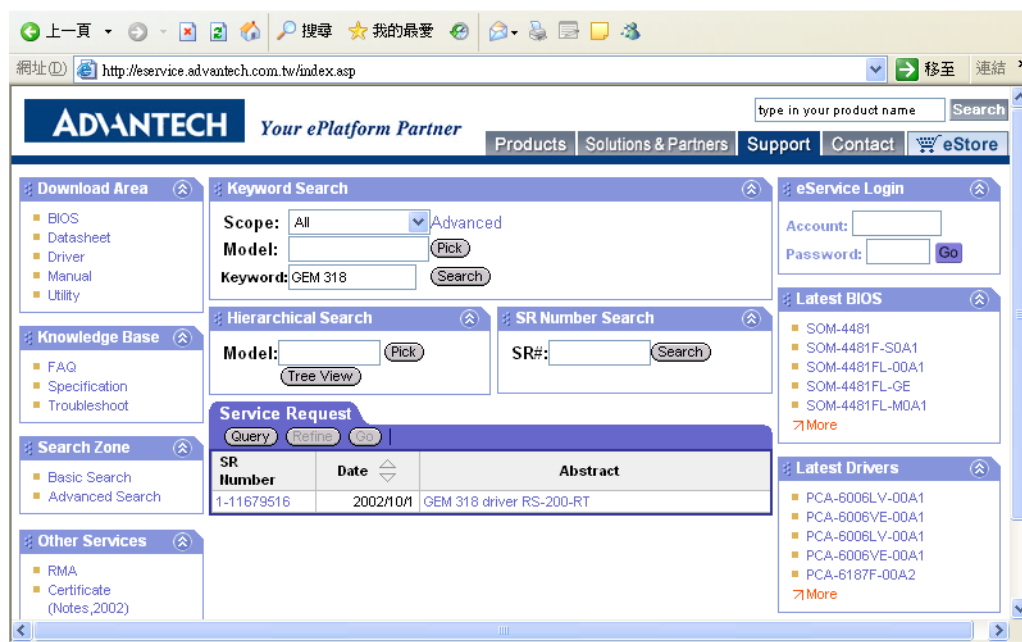
5.4.2 Installing the GEM318 Driver

The GEM318 can work well without a driver, but in order for a Windows 2000 OS to recognize it, you must install the driver. Please follow the steps below to download the GEM318 driver from the Advantech website.

1. Connect to Advantech's eService website: <http://eservice.advantech.com.tw>.



2. Click on *Advanced Search*.
3. Type "GEM318" under the Keyword field. Then click on .
4. The specific driver will show on the Service Request section.



5. Click the driver, and then you will see two files. The file *GEM-install.doc* is the installation guide, and the file *gem318.inf* is the actual driver.
6. Please be sure to follow the installation steps given in *GEM-install.doc* in order to successfully complete the installation.

5.5 SAF-TE

SAF-TE stands for SCSI Accessed Fault-Tolerant Enclosure. The SCA backplane with built-in GEM318 chipset supports SAF-TE. It provides a standard, non-proprietary way for the third party disk and RAID controllers to be fully integrated with peripheral packing that supports status signals (LED, audible alarm, LCD, etc.), hot-swap Ultra320 SCSI HDDs, and monitoring of enclosure components, such as disk drives, power supplies, thermal sensors, fans, etc. For ACP-5260, the GEM318 chipset checks the disk status only, others items such as fans, temperature, power supply and voltage are monitored by an alarm board.

5.6 RAID Application

RAID stands for Redundant Array of Independent/Inexpensive Disks. ACP-5260 can be integrated with a SCSI RAID card, such as AMI (LSI), Adaptec, Intel or Mylex RAID card to perform Disk Array functions. The SCSI RAID controller is another suitable option to integrate with ACP-5260.

When you install an add-on SCSI RAID card or a SCSI RAID controller as a RAID system, please follow these steps:

1. Open the top front cover and to find the 68-pin Ultra320 SCSI connector on the rear side of the SCSI backplane.
2. Connect the provided Ultra320 SCSI 68-pin flat cable from the SCSI backplane to the add-on SCSI RAID card or SCSI RAID controller.
3. You can install up to six SCSI SCA-2 80-pin HDDs. Please follow the instructions of the SCSI RAID card or SCSI RAID controller to implement your RAID system.

Table 5.3: LED for SCSI HDD Power and Status

LED	Description	Green	Blue	Red	Blue & Red
PWR	HDD power	HDD power on	N/A	N/A	N/A
Status	Status of HDD	N/A	Data access	HDD failure	Data rebuild or construction

Appendix **A**

Exploded Diagram and
Parts List

A.1 Exploded Diagram and Parts List

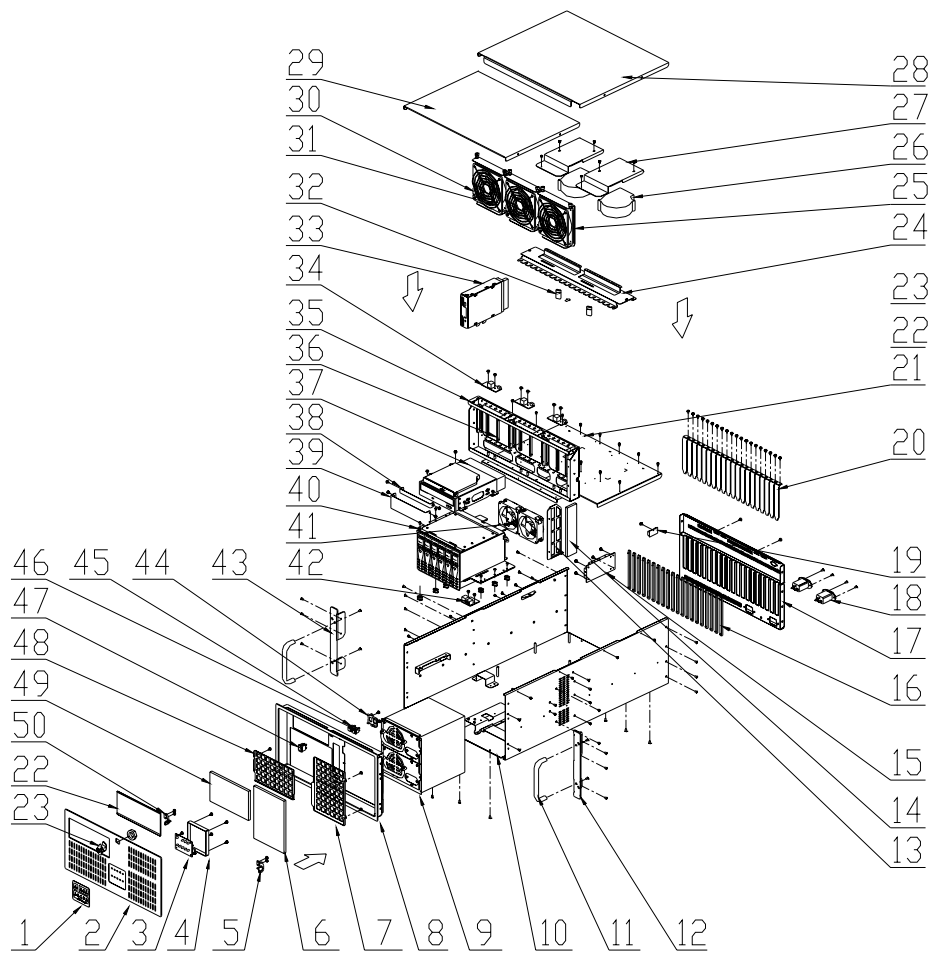


Figure A.1 Exploded diagram

Table A.1: Parts List

No	Description	No	Description
1	LED Indicator Plate	27	Blower Bracket
2	Door	28	Top Rear Cover
3	LED Board	29	Top Front Cover
4	LED Cover	30	Fan Guard
5	Door Hinge (Right)	31	Fan Bracket
6	Filter (177*155*5 mm)	32	Clamp Pad
7	Door Filter Holder	33	FDD Bracket
8	Front Panel U	34	Fan Board
9	AC 460W (1+1)	35	Guide Rail Bracket
10	Chassis Chassis	36	Card Guide Rail
11	Handle (Black)	37	Disk Drive Bracket
12	Rack Mount Ear (Right)	38	Slim Type ODD Cover
13	Side Filter Cover	39	FDD Cover
14	Side Filter (170*42 mm)	40	SCSI HDD Housing
15	Alarm Board	41	HDD Fan (80*80*25 mm)
16	Card Guide Rail	42	Front IO Board
17	Rear Cover	43	Rack Mount Bracket-L
18	AC Inlet	44	Reset SW Bracket
19	Sensor Board	45	System Reset Button
20	Adapter Bracket	46	Alarm Reset Button
21	Mounting Plate	47	ATX Power ON Switch
22	Transparent Sheet	48	Filter Cover
23	Key Set	49	Door Filter (155x100 mm)
24	Hold Down Clamp	50	Door Hinge (Left)
25	Fan Bracket (120 mm)		
26	Fan Blower		

Appendix **B**

Backplane & Motherboard Options

B.1 Backplane Options

ACP-5260 supports a variety of PICMG 1.3 / 1.0 backplanes. Users can contact a local sales representative for detailed specifications and information.

Table B.1: PICMG 1.3 Backplane Options

Model Name	Segment	Slots per Segment			
		SHB*	PCIe x 16	PCI-X	PCI
PCE-5B18	Single	1	1	8	8
PCE-5B16Q	Quad	4	4	-	8

Table B.2: PICMG 1.0 Backplane Options

Model Name	Segment	Slots Per Segment			
		PICMG	PICMG/ PCI	PCI	ISA
PCA-6120P4	Single	2	--	4	14
PCA-6120P12	Single	1	1	11	7
PCA-6120P18	Single	1	1	17	1
PCA-6119P7	Single	2	--	7	10
PCA-6119P16X	Single	2	--	16	1
PCA-6119P17-0B1	Single	1	1	16	--

B.2 Motherboard Options

ACP-5260 supports a variety of Advantech ATX motherboards as listed below. You can contact a local sales representative for detailed information.

Table B.3: Motherboard Options

Model Name	Bus				
	PCI	PCI/ISA	ISA	AGP	SATA
AIMB-742	4 (32-bit)	1	1	1 (8X)	2
AIMB-744	2 (PCI-X 64-bit) 4 (PCI 32-bit)	--	--	1 (8X)	2
AIMB-750	2 (PCI-X 64-bit) 4 (PCI 32-bit)	--	--	1 (4X)	2
AIMB-760	1 (PCIe 16X) 2 (PCIe 1X) 5 (PCI 32-bit)	--	--	--	4
AIMB-762	5 (PCI 32-bit) 1 (PCIe 16X) 1 (PCIe 4X)	--	--	--	4
AIMB-763	5 (PCI 32-bit) 1 (PCIe 16X) 1 (PCIe 1X)	--	--	--	4
AIMB-764	5 (PCI 32-bit) 1 (PCIe 16X) 1 (PCIe 4X)	--	--	--	5
AIMB-766	1 (PCIe 16X) 2 (PCIe 1X) 4 (PCI 32 bit)	--	--	--	6

www.advantech.com

Please verify specifications before quoting. This guide is intended for reference purposes only.

All product specifications are subject to change without notice.

No part of this publication may be reproduced in any form or by any means, electronic, photocopying, recording or otherwise, without prior written permission of the publisher.

All brand and product names are trademarks or registered trademarks of their respective companies.

© Advantech Co., Ltd. 2009